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09/916,529	07/30/2001	Kazuhiko Hayashi	01FN046US	9042

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EXAMINER
KLIMOWICZ, WILLIAM JOSEPH

ART UNIT	PAPER NUMBER
2652	12

DATE MAILED: 06/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/916,529	Applicant(s) HAYASHI ET AL.	
	Examiner William J. Klimowicz	Art Unit 2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-63* is/are pending in the application.

4a) Of the above claim(s) *10-63* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *19 March 2002* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restriction

Applicants' election of Specie Ic (FIG. 12) without traverse in Paper No. 10, filed May 7, 2003, is acknowledged. The Applicants contend that claims 1-9 read on the elected embodiment.

Claims 10-63 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 10 (filed May 7, 2003).

Claim Informalities

Claims 4-6 are objected to because of the following informalities:

With regard to claim 4 (line 2 and first occurrence in line 4) and claim 5 (line 7), the word --said-- or --the-- should be inserted before the phrase "free layer."

With regard to claim 4 (line 3) and claim 5 (line 6), the word "Underlying" should be spelled as the word --underlying--.

With regard to claim 5 (line), the phrase "said vertical bias layer protective is in contact with layer at least one of" should be reworded.

With regard to claim 6 (line 15), the phrase "non-magnetic body" should be replaced by the phrase --non-magnetic layer--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Redon et al. (US 6,469,879).

As per claim 1, Redon et al. (US 6,469,879) discloses a magneto-resistance effect element (1) comprising: a lower conductive layer (71); a free layer (20 and/or 23) provided on the lower conductive layer (71) and having an orientation of magnetization varied by a magnetic field applied thereto (e.g., see COL. 5, lines 37-39); a non-magnetic layer (30) provided on top of the free layer (20 and/or 23); a fixed layer (40) provided on the non-magnetic layer (30) and having a pinned orientation of magnetization (e.g., COL. 5, lines 38-43); and a vertical bias layer (61), provided on said lower conductive layer (71), for applying a magnetic field to said free layer (20 and/or 23), and said free layer (20 and/or 23) is greater in length (Lf) in the direction of a magnetic field (i.e., the longitudinal direction as depicted by biasing fields (α1)) applied thereto by said vertical bias layer (61) than said fixed layer (40) (length Lp), and a sense current for detecting a change in electrical resistance of said non-magnetic layer (30) flows substantially in perpendicular relation to said non-magnetic layer (30) (e.g., see COL. 7, lines 33-35).

As per claims 2 and 8, said lower conductive layer (71) has a recessed portion on an upper surface thereof, and said vertical bias layer (61) is provided so as to allow at least part thereof to be buried in said recessed portion (e.g., see FIG. 2).

As per claims 3 and 9, at least part of said free layer (20) is in direct contact with said vertical bias layer (61).

As per claim 4, further comprising an underlying layer (e.g. 21, 22) for free layer (e.g., 23) provided under said free layer, and said underlying layer (21, 22) for free layer in contact with said free layer (e.g., 23) and said vertical bias layer (61) (cf. FIGS. 2 and 3).

As per claim 5, further comprising a vertical bias layer protective layer (e.g., (93)) provided on said vertical bias layer (61), and said vertical bias layer protective layer (93) is in contact with said vertical bias layer (61) (e.g., see FIG. 2), and said vertical bias layer protective (93) is in contact with layer of at least one of said free layer (20 and/or 23) and said underlying layer (21, 22) for free layer (23).

Additionally, as per claim 6, a magnetic layer (e.g., 21) provided on the lower conductive layer (71); a free layer (23) provided on the magnetic layer (21) and having an orientation of magnetization (23a) varied by a magnetic field coupled magnetically to the magnetic layer (21) and applied thereto; the non-magnetic layer (30) provided on the free layer (23); the fixed layer (40) provided on the non-magnetic layer (30) and having a pinned orientation of magnetization; and the vertical bias layer (61), provided on said lower conductive layer (71), for applying a magnetic field to said free layer (23), and said magnetic layer (21) is greater in length in the direction of a magnetic field applied thereto by said vertical bias layer than said free layer (23) (see, e.g., FIG. 3), and the sense current for detecting a change in electrical resistance of said

non-magnetic layer body (30) flows substantially in perpendicular relation to said non-magnetic layer (30) (e.g., see COL. 7, lines 33-35).

As per claim 7, wherein said magnetic layer (21) is magnetically coupled to said free layer (23) by anti-ferromagnetic coupling or ferromagnetic coupling (e.g., see FIG. 3).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (703) 305-3452. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

William J. Klimowicz
Primary Examiner
Art Unit 2652

WJK
May 30, 2003